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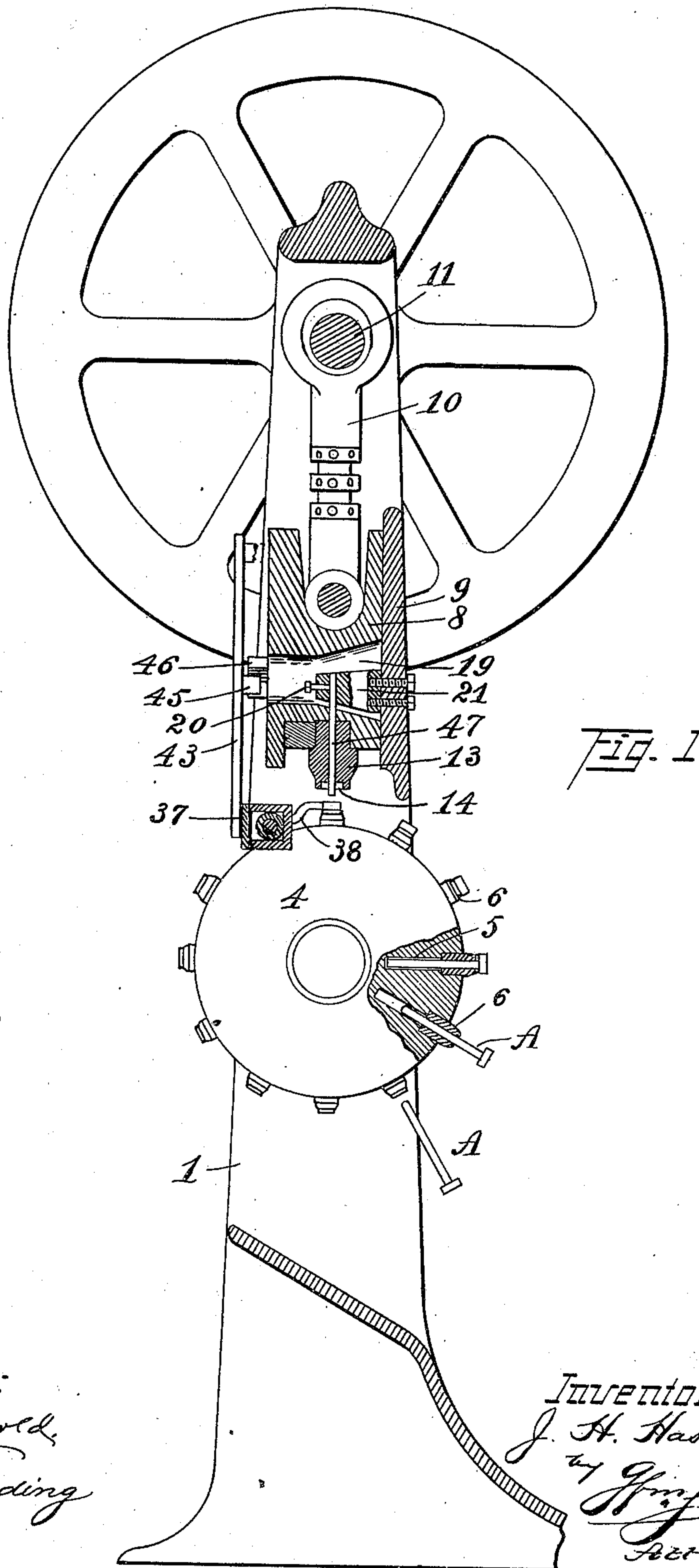
Patented Feb. 19, 1901.

J. H. HASKINS.
BOLT HEAD TRIMMING MACHINE.

(No Model.)

(Application filed Oct. 4, 1899.)

4 Sheets—Sheet 1.



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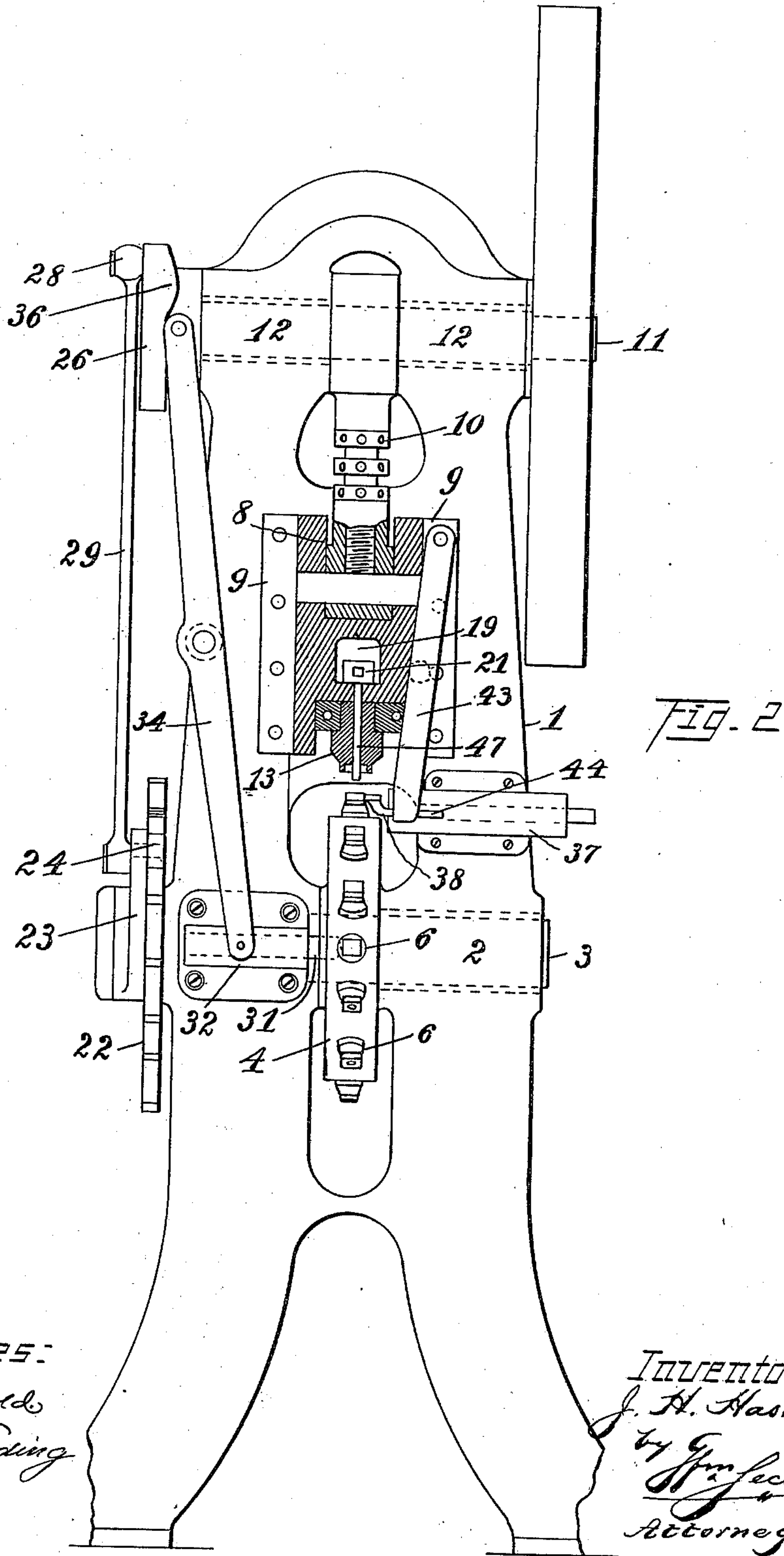
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4 Sheets—Sheet 2.



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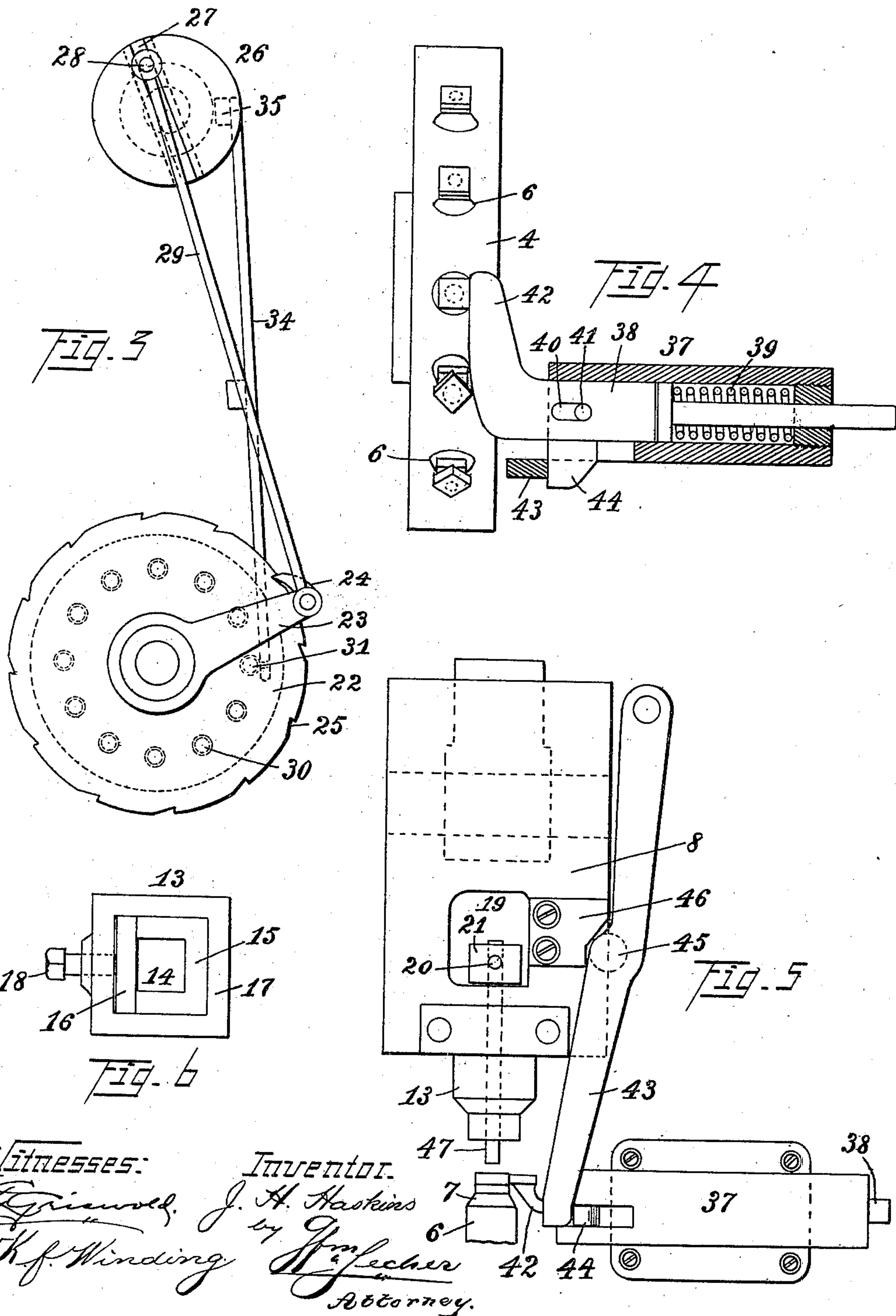
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4 Sheets—Sheet 3.



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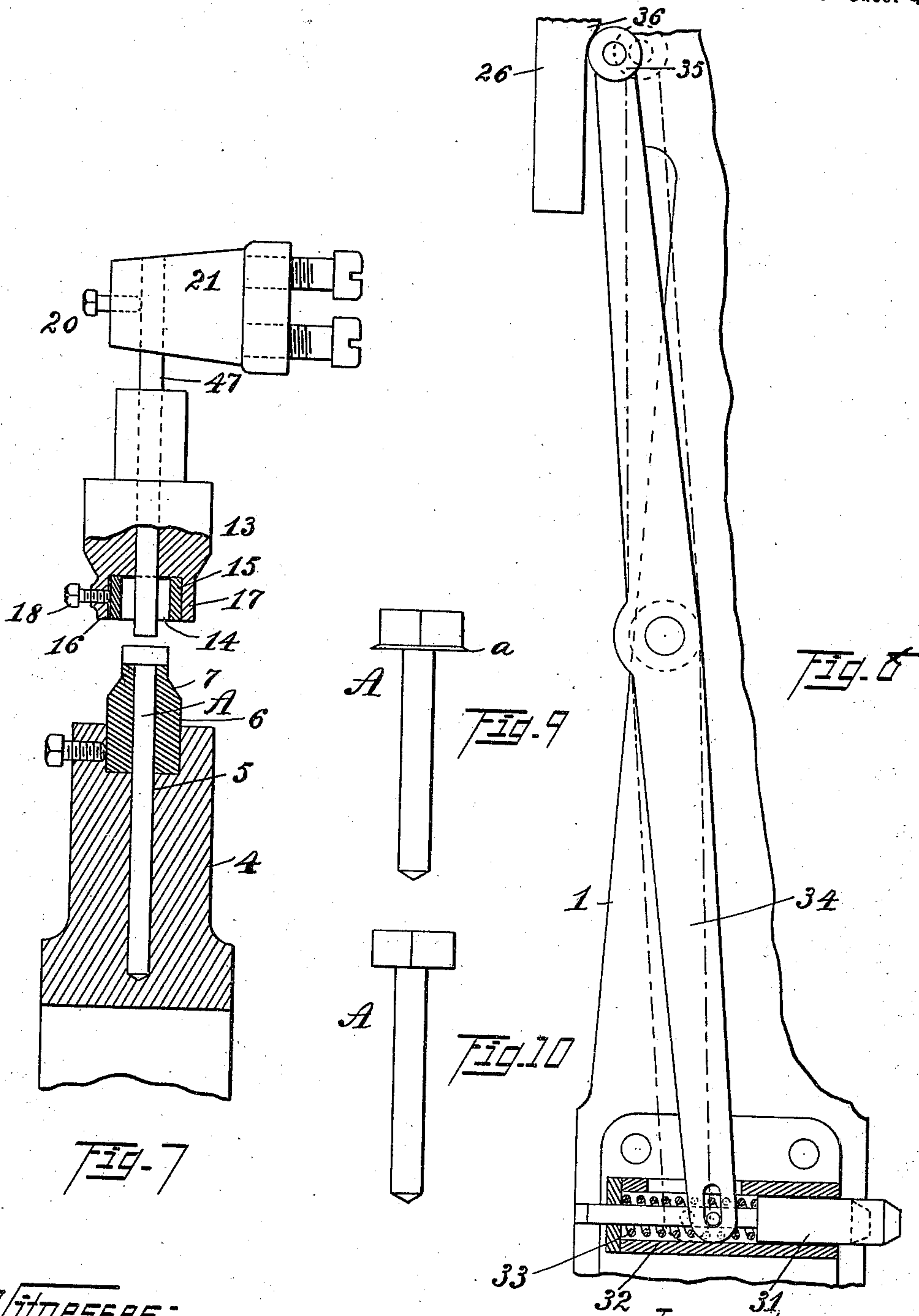
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

JAMES H. HASKINS, OF CHICAGO, ILLINOIS.

BOLT-HEAD-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 668,180, dated February 19, 1901.

Application filed October 4, 1899. Serial No. 732,501. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. HASKINS, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Bolt-Head-Trimming Machines, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The annexed drawings and the following description set forth in detail one mechanical form embodying the invention, such detail construction being but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure 1 represents a vertical section of my improved bolt-head-trimming machine; Fig. 2, a front view of the machine, showing the plunger in section; Fig. 3, a detail view illustrating the feed mechanism for rotating the bolt-carrying disk; Fig. 4, a detail plan view of the device for straightening and alining the bolt-heads; Fig. 5, a detail front view of said device; Fig. 6, a detail end view of the upper die; Fig. 7, a detail view, partly in section, of the upper and lower dies and their immediate surroundings; Fig. 8, a detail view of the stop-bolt for the bolt-feeding disk and its operating-lever; and Figs. 9 and 10, views of, respectively, an untrimmed and a trimmed bolt.

An upright frame 1 has journal-bearings 2, in which a shaft 3 is journaled. Said shaft has a disk 4 secured upon it, which disk has a number of radial bores 5 for the reception of the bolts to be trimmed. Dies 6 are secured in enlargements at the outer ends of said bores, and the outer ends of said dies, which project beyond the periphery of the disk, are formed with seats for the bolt-heads and with tapering portions 7 below said seats, so that the washer-shaped fins from the bolt-heads may be split open and broken as they are crowded down upon said tapering portions by the upper movable die.

In the ordinary bolt-heading machine a fin *a* is formed at the base of the head of the bolt by the metal from the end of the bolt-blank, which is upset to form the head, being forced out between the bolt-holding die and the head-

forming die; and the object of the present invention is to provide a machine in which this fin may be removed and from which the bolt-head may issue clean cut.

A plunger 8 reciprocates in vertical guides 9 in the machine-frame vertically over the center of the bolt carrying and feeding disk and receives reciprocating movement through a pitman 10, eccentrically and pivotally connected to a drive-shaft 11, journaled in bearings 12 in the upper end of the machine-frame. Said shaft receives rotary motion from a power source in a suitable manner. A die 13 is secured in the lower end of the plunger and has a recess 14 of a shape and size corresponding to the shape and size of the bolt-head to be trimmed, so that the die may be depressed over the bolt-head in the carrier-disk die directly beneath it and shear off the fin and force the same down over the tapering carrier-die, splitting the fin. The die is preferably composed of a section 15, having an open side, and a section 16, closing such open side, and said sections are secured together in a box 17, inclosing the sections and having a set-screw 18, which bears against the closing-section 16. By constructing the die in this manner the expensive process of die-sinking is avoided, as the two sections may be made by the ordinary planing or milling process, the open-sided section being capable of such treatment on account of its shape, which makes the recess in it accessible to ordinary planing or milling tools. An ejector-rod 19 extends axially through the recess in the upper die and through the lower part of the plunger into a transverse recess 19 in the plunger, where its upper end is secured by a set-screw 20 in a bracket 21, projecting into the recess from the machine-frame. As said ejector is stationary, it will force the bolt-head out of the die-recess when the plunger rises if the bolt-head be caught by the die and the bolt be drawn upward by the movable die. The bolt will thus drop back into the lower die and will be carried around in said die by the revolution of the carrying-disk until it will drop out of the die by its own gravity when its die arrives at the lower portion of the revolution of the disk. The shaft of the bolt-carrying disk has a ratchet-disk 22 secured upon one end, and an

arm 23 is pivoted at its inner end upon said shaft and has a pawl 24 pivoted at its outer end, which pawl engages the notches 25 in the periphery of the ratchet-disk. Said notches correspond in number and position to the radial bores and dies in the carrying-disk. A disk 26 is secured upon the drive-shaft and has a diametrical T-groove 27 cut into its face, into which groove the head of a wrist-pin 28 is adjustably secured, so that said pin may be adjusted at varying distances from the center of the disk. A connecting-rod 29 is pivoted at one end upon said adjustable wrist-pin and with its other end to the end of the pawl-carrying arm. One face of the bolt-carrying disk has an annular series of holes 30, which are engaged by the end of a bolt 31, sliding in a box 32 upon the machine-frame at a right angle to the face of the disk. A spring 33 forces the bolt against the disk and into a hole in the same. The lower end of a lever 34, fulcrumed upon the machine-frame, is pivoted to the bolt, and the upper end of said lever carries a roller 35, which bears against the rear cam-face of the disk 26 upon the drive-shaft, which cam-face has a bulge 36, which will at one part of the revolution of the disk rock the lever to withdraw the bolt from the hole in the bolt-carrying disk, permitting the same to be moved by the pawl-arm. A box 37 is secured upon the machine-frame at the upper portion of the periphery of the bolt-carrying disk, and a wiper 38 has its shank sliding in said box. A spring 39 bears against said shank, forcing the wiper toward the periphery of the disk, and the play of the wiper is limited by a slot 40 in the shank of the wiper and a pin 41, passing through the box and through said slot. The outer end of the wiper is curved upward and rearward to bring the end of its rearwardly-extending wiper-arm 42 on a level with the bolt-heads as they are carried beneath the reciprocating upper die. The edge of said wiper-arm is curved, so that the bolt-heads may bear against said edge and be turned by the edge to properly present beneath the die, the rear portion of said edge being straight, so as to bear against the flat side of the bolt-head in proper alinement. The spring behind the wiper will admit of the latter yielding when a corner of the bolt-head strikes the edge of the wiper-arm, so that the bolt may be turned to have one of its flat faces bear against the edge to be properly presented to the trimming-die. For the purpose of withdrawing the wiper out of the way of the descending trimming-die an arm 43 is provided to bear against a shoulder 44 upon the wiper-shank, projecting outward through a slot in the face of the box. Said arm is pivoted at its upper end upon the machine-frame, and has a roller 45 projecting from it, which roller may be engaged when the plunger descends by the oblique edge of a cam-plate 46 upon the face of the plunger, so that the arm may be forced to one side by said cam-plate

when the plunger descends, and thereby push the wiper back out of the way of the descending trimming-die.

In practice dies having a shape corresponding to the shape of the bolt-heads to be trimmed are secured in the carrier-disk, and a correspondingly-shaped female die is secured in the plunger. The number of dies in the carrying-disk may be greater or less, according to the size of the bolts to be trimmed and the corresponding diameter of the disk, and the ratchet-disk upon the shaft of the carrier-disk has a corresponding number of notches. The throw of the pawl-arm engaging the ratchet-notches may be adjusted according to the number of dies and notches by adjusting the wrist-pin nearer to or farther from the center of the disk upon the drive-shaft. The bolts to be trimmed are suitably fed into the dies upon the bolt-carrying disk and are successively fed beneath the reciprocating die by the rotation of said disk. The wiper aligns the sides of the bolt-heads, so that they will be properly presented to the action of the dies, whereupon the wiper recedes and the upper die descends, trimming off the fin and forcing the washer thus trimmed off down upon the tapering portion of the male die, where such washer is split and drops off. As the bolt-carrying disk rotates the trimmed bolts are carried over with the disk and drop out of their dies by their gravity. The bolt-heads are illustrated as square in the drawings; but bolt-heads of any shape may be trimmed, as it is only necessary to change the shapes of the dies accordingly. The sectional upper die may be made at a less expense and with more accuracy by being formed from two milled or planed sections held together by a set-screw in a box than by being sunk into a solid piece of hard steel. Each revolution of the drive-shaft finishes a bolt-head, and the bolt-carrying disk, with the dies in its periphery, is firmly held by the sliding spring-bolt until the upper die has descended and trimmed the bolt-head presented to it, when the disk is again rotated to present a new bolt-head. The bolt-carrying disk is held stationary during the greater portion of the reciprocating travel of the plunger, so that ample time is given for bolts to be fed into the male dies in the disk and for the movable die to descend upon the bolt-head to trim the same and to again rise from the same and discharge it if the bolt-head should stick in the die. No time is lost in alining the bolt-heads, as the wiper performs this function while the carrying-disk is rotated to present the bolt-head to the reciprocating die.

Other modes of applying the principle of my invention may be employed for the mode herein explained. Change may therefore be made as regards the mechanism thus described, provided the principles of construction set forth, respectively, in the following claims are employed.

I therefore particularly point out and distinctly claim as my invention—

1. In a bolt-head-trimming machine, the combination of a bolt-carrier disk journaled to revolve in a vertical plane and having male dies upon its periphery each formed with a bore radial to the disk to receive the bolt-shank, a plunger reciprocating above said disk and having a female trimming-die adapted to register with each of said male dies, a yielding wiper having an edge parallel with the line of movement of the carrier to bear against the faces of the bolt-heads to aline the same upon the dies, means for withdrawing said wiper and connected to be actuated by the descending plunger, stop mechanism engaging the carrier-disk to hold the same while the descending female die engages a bolt-head, mechanism between the plunger and stop mechanism to release the latter when the plunger and die have released the bolt-head, and means connecting the reciprocating plunger and the carrier-disk to rotate the latter to successively present the bolt-heads to the trimming-die and to allow the trimmed bolts to drop out of the male dies as the latter arrive in their inverted position by the rotation of the disk, substantially as set forth.

2. In a bolt-head-trimming machine, the combination of a bolt-carrier having dies in which the shanks of the bolts are inserted and upon which the bolt-heads are supported, means for actuating said carrier, and a yielding wiper having a rounded corner presenting toward the line of movement of the carrier and an edge parallel with said line, whereby the bolt-heads may be engaged by the

wiper and be turned in the dies to aline their faces, substantially as set forth.

3. In a bolt-head-trimming machine, the combination of a bolt-carrier having dies in which the shanks of the bolts are inserted and upon which the bolt-heads are supported, means for actuating said carrier, and a wiper consisting of a shank having a spring forcing it toward the carrier and an arm curved in the direction of the carrier's travel and having its edge presenting to bear against the faces of the bolt-heads to turn the latter to aline their faces, substantially as set forth.

4. In a bolt-head-trimming machine, the combination of a reciprocating plunger carrying a bolt-head-trimming die, a bolt-carrier having dies in which the shanks of the bolts are inserted and upon which the bolt-heads are supported, means for actuating said carrier, a wiper consisting of a shank having a spring forcing it toward the carrier and an arm curved in the direction of the carrier's travel and having its edge presenting to bear against the faces of the bolt-heads to turn the latter to aline their faces, an arm bearing against said wiper, and a cam upon the plunger and engaging said arm to push back the wiper at the descent of the plunger, substantially as set forth.

In testimony that I claim the foregoing to be my invention I have hereunto set my hand this 1st day of September, A. D. 1899.

JAMES H. HASKINS.

Witnesses:

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F. H. GERE.